

BULLETIN

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A Wall Street Man and A Western Railroad

A CHAPTER IN RAILROAD ADMINISTRATION

This article deals with a few aspects of the management of the Southern Pacific Company under E. H. Harriman from his assumption of control of the road in 1901 until his death in 1909. This was a short period in the railroad's history and yet it was long enough to supply ample illustration of the methods which Harriman, a former Wall Street broker, employed to attain great success in the administration of this huge railroad system. It exemplifies the truth that a big job must be done by the coöperative work of many men, albeit with a strong man at the top. It shows the successful operation of a big business unit under a strong top-level organization which allowed for individual freedom and initiative at lower levels. It was the Harriman system, even more than Harriman, alone, that did so much for the Southern Pacific. And, then, we must not forget that some of the ideas which Harriman put into effect were nurtured by the former president, C. P. Huntington, who never found the opportunity to carry them out. But if Harriman did not largely conceive the policies and techniques and train the men, he merged them into a great concept of policy, organization, and management which he supported with his financial strength and his capacity as an administrator. The story of his administration of the Southern Pacific illustrates an important stage in the history of American railroad administration and, indeed, of this country's large-scale business administration in general.

From its inception until the death of Collis P. Huntington the Southern Pacific was one of the few great railroad companies not dominated, either financially or managerially, by Wall Street's financial capitalists. Geographical conditions, it is true, necessitated close coöperation between the Southern Pacific and the Union Pacific in transcontinental traffic matters. As the last of the "Four Associates," however, Huntington continued the policy of avoiding eastern "entanglements." He resisted all efforts of the Union Pacific, first under Gould and then under Harriman, to secure a basis for common management of the two roads.

The circumstances and factors which finally made the control of the Southern Pacific by the Union Pacific possible, and from the latter road's own position necessary, can be summarized as follows:

1. Outside influences were favorable to combination. Although Theodore Roosevelt had been elected President in 1901, government hostility and public feeling against big business were not as yet important deterrents to the combination of railroad systems. As a matter of fact, the "mania for combination" in large-scale business which started in 1898 was prevalent until about 1903.¹ Also, in January, 1901, there was an upswing in the business cycle which reached its high in September, 1902.²

2. The success of Harriman, the financier turned railroad man, with the physical rehabilitation of the Union Pacific and associated lines had proved his worth as a railroad organizer and operator, thus bringing him almost unlimited financial backing and credit. Politically, he was on friendly if not intimate terms with President Roosevelt, whose political activities he supported until 1906.

3. The Union Pacific was dependent upon Huntington's Central Pacific for main-line connections with California, and its Oregon lines depended on other lines of the Southern Pacific system for northern entries into California. As long as Huntington resisted the combination of the two systems, full efficiency could not be gained from the use of the Union Pacific's new and heavier equipment on traffic requiring interchange with the Southern Pacific. True, Huntington was coöperative in transcontinental traffic matters, but lack of money hampered his attempts to bring his railroads up to Union Pacific standards. Furthermore, Huntington was an old man, and his death might result in the passing of control of the Southern Pacific to interests less friendly toward Harriman.

4. In addition to the Union Pacific's anxiety over the future of the Central Pacific lines, there was the problem of competition between the Union Pacific and the Sunset Lines of the Southern Pacific for transcontinental traffic. The Interstate Commerce Commission's investigations of Harriman in 1907, as well as the testimony in the Union Pacific-Southern Pacific anti-trust case in 1912, showed that competition actually had existed between the two systems for local as well as for transcontinental hauls.

¹ N. S. B. Gras & Henrietta M. Larson, *Casebook in American Business History* (New York: F. S. Crofts & Co., 1939), p. 730.

² *Ibid*, p. 738.

5. Harriman strongly believed in the benefits of the integration and consolidation of separate lines into a single system, and, like James J. Hill, he developed a plan for an international system of railway and steamship lines. Securing control of the Southern Pacific (and thus the Pacific Mail Steamship Company) would not only mean obtaining the benefits of combination for both the Union Pacific and the Southern Pacific, but it would also constitute a major step in making his "master plan" a reality. Harriman, however, disclaimed initial interest in the entire Southern Pacific system, maintaining that control of the Central Pacific was all he desired.³ Nevertheless, after the system had been acquired, there was no publicized attempt to dispose of all but the Central Pacific.

6. On August 13, 1900, Collis P. Huntington, president of the Southern Pacific, died. His heirs and the successors to his management did not share his desire for independent control of the system. They were, in fact, open to an offer of purchase.

Such conditions as these were all favorable to the Union Pacific's purchase of control of the Southern Pacific. The fear that the purchase might put the Southern Pacific's resources at the mercy of eastern speculation was the public's main objection to the merger in 1901.

The purchase of the system by the Harriman interests would inevitably involve tremendous problems for management. With the addition of the Southern Pacific the rail lines under Harriman's control would amount to approximately 18,500 miles. This was 19 per cent of the railroad mileage west of the Mississippi-Missouri rivers and south of the Northern Pacific lines.⁴ Harriman also held stock in the Chicago & Alton, the Illinois Central, and other minor lines, as well as a contract with the San Pedro, Los Angeles & Salt Lake which gave him varying degrees of control over and responsibility for their operations.

Furthermore, "to secure complete control of it (the Southern Pacific), the Union Pacific would have to make a cash investment of more than \$50,000,000, and this, for a company that had only recently emerged from bankruptcy and that had on hand a cash surplus of

³ George Kennan, *E. H. Harriman: A Biography* (Boston: Houghton, Mifflin Co., 1922), vol. i, p. 235. Quotations from this book are reproduced here by courtesy of the publisher.

⁴ Stuart Daggett, *Chapters on the History of the Southern Pacific* (New York: Ronald Press Co., 1922), p. 428.

less than \$4,000,000, seemed an almost impossible task."⁵ As he had shown in the affairs of the Union Pacific, Harriman was the man for tasks which other men considered impossible.

ASSUMPTION OF CONTROL OF THE SOUTHERN PACIFIC

BY HARRIMAN

In February, 1901, the Union Pacific acquired 475,000 shares, about 20 per cent of the stock of the Southern Pacific, through the purchase of the stock which Huntington had willed to his wife and nephew and the stock held by Edwin Hawley, his most intimate business associate. Prior to this purchase the Union Pacific had been able to buy 202,000 shares through Kuhn, Loeb & Company on the open market (at an average price of \$50.6146, although the market price was only about \$45). On March 4, the same bankers delivered 72,300 additional shares at about the same price plus interest from February 11. Thus the Union Pacific obtained a total of 750,000 shares of the nearly 2,000,000 shares of the common stock outstanding, or 38 per cent.⁶

These purchases were not without opposition. Speyer & Company, the financial agents of the Southern Pacific, opposed the sale of the Huntington interests to the Union Pacific, as did other corporations and individuals who had ambitions to fulfill. Harriman was able to overcome this opposition by skillful and persistent negotiation with Edwin Hawley, who also represented the Huntington estate.

The stock purchases were financed through the issue of part of a \$100,000,000 convertible bond authorization of the Union Pacific. The interest on these bonds was not to exceed 4 per cent, and as an attraction to investors they were made convertible, at any time within five years, into Union Pacific Company common stock at par. The issue was secured "by a first mortgage on 1135 miles of improved road [of the Union Pacific], and by a collateral lien on certain securities of the Oregon Short Line and the Oregon Railroad and Navigation Company, which were held as free assets in the Union Pacific treasury and which had a par value of about \$66,000,000."⁷ Good business conditions, the excellent reputation of the Union Pacific, and the

⁵ Kennan, *op. cit.*, vol. i, p. 234.

⁶ Stuart Daggett, *Railroad Reorganization* (Boston: Houghton Mifflin Co., 1908), p. 258.

⁷ *Ibid.*, p. 236.

speculative possibilities of the convertible feature aided in providing a ready market for the bonds.

Thirty-eight per cent of the common stock did not, of course, give Harriman and the Union Pacific a majority control. With the exception of the Huntington interests, however, the stock ownership was so widespread throughout Europe and the United States that Harriman held the only effective control. Although his control in 1901 was sufficient to forestall attempts by other interests to get into the Southern Pacific's management, Harriman continued to authorize stock purchases.⁸ The following year the Union Pacific's holdings of common stock were increased to 900,000 shares. Around the same time, purchases of 180,000 shares of preferred stock brought the aggregate holdings up to 1,080,000 shares, or 45.49 per cent, of the entire 2,374,000 shares of capital stock outstanding. For all practical purposes these holdings gave Harriman undisputed control of the Southern Pacific.

A biographer of Harriman has described the Southern Pacific system as follows:⁹

The Southern Pacific, when Mr. Harriman and his associates thus acquired control of it, was the greatest transportation system in the world. It operated a continuous main line extending from Portland, Oregon, to New Orleans, Louisiana, by way of San Francisco, Los Angeles, Yuma, and El Paso; its equally important main line (the old Central Pacific) ran eastward across the Sierra Nevadas to the junction with the Union Pacific at Ogden; while it connected with an extension into Mexico some hundreds of miles from the Arizona border, owned by the same interests that owned the Southern Pacific. The company had also bought, leased, or absorbed more than a dozen other railroads of less importance, so that in 1901 it owned or controlled nearly nine thousand miles of continuous track in eight different States or Territories.

Since the area directly tributary to the Southern Pacific comprised roughly one-third of the United States, the traffic of the system was large and diversified. In 1901, as an example, it moved nearly three million tons of forest products, over a million tons of grain, over half a million tons of cotton, nearly a million tons of fruits and vegetables, three million tons of manufactured articles, and six million tons of miscellaneous products, "all of which originated in, or was carried to, the region traversed by its lines."¹⁰ Unlike the Union Pacific, which

⁸ These additional purchases were to a large extent to protect the management from a minority group that disagreed with the company's dividend policy.

⁹ Kennan, *op. cit.*, vol. i, pp. 240-241.

¹⁰ *Ibid.*, pp. 241-242.

relied chiefly on transcontinental traffic for profits, the Southern Pacific had a well-balanced traffic which accounted for a large and profitable local-haul business.

Stuart Daggett, an authority on the history of the Southern Pacific, considered the Union Pacific's control of the road of great importance. "Not only," he wrote, "did it afford a direct connection between Ogden and the coast, but it eliminated one of the Union Pacific's four great competitors in transcontinental business, and made Mr. Harriman the dominant figure in the Southwest."¹¹

The chief periodical of the railroad industry, the *Railroad Gazette*, editorialized the acquisition as follows:¹²

This much we can safely say: The control of the Southern Pacific has passed to a small number of gentlemen who also control the Union Pacific, the Chicago & Alton, and the Kansas City Southern, and who influence strongly, if they do not actually control, lines all the way to the Atlantic. Thus harmonious working is assured among certain eastern trunk lines, certain middle western lines and two of the great lines to the Pacific, and this is a tremendous step in the process of consolidation. We do not need to say that we judge that this step is in the interest of the railroads, although the event will supply additional ammunition for the Interstate Commerce Commission in its campaign for complete control of the railroads.

The editorial went on to say:

The strong and intelligent management of the Union Pacific is making remarkable improvements in that property and the nation would be benefited by extending the same far-sighted policy over the Central Pacific; but it must not be inferred from this that the Southern Pacific people have been standing idle while so many of the other great roads have been improving their physical condition. On the contrary, in recent years the Southern Pacific has been made highly efficient, but no such radical changes in grade and line have been made as are now in progress on the Union Pacific.

In explaining its stock purchases to its stockholders, the Union Pacific said:¹³

The vital importance of securing for the Union Pacific System its due proportion of the tonnage and revenue tributary to its lines, rendered it essential, that steps should be taken to maintain and protect the position of the system and to safeguard its future against combinations of other lines, which might divert much business by changes in existing channels of transportation. In furtherance of this policy and for the purpose of developing and extending the business of the system and opening new channels of interchange,

¹¹ Daggett, *Railroad Reorganization*, p. 258.

¹² *Railway Gazette*, Feb. 8, 1901, vol. xxxiii, p. 96.

¹³ From the Union Pacific's annual report for June 30, 1901, as quoted in the *Railroad Gazette* for Jan. 3, 1902, vol. xxxiv, p. 9.

the Directors deemed it necessary to acquire \$75,000,000 par value of the capital stock of the Southern Pacific, and \$78,108,000 par value of the stock of the Northern Pacific. The geographical position of the Union Pacific with regard to the Southern Pacific and Northern Pacific afforded many opportunities for important interchange of business; and the acquisition of these stocks has greatly strengthened the position of the system and enabled it to undertake the development of new avenues and sources of traffic.

The stock purchase, then, enabled the Union Pacific to accomplish three major objectives: it eliminated competition from the Southern Pacific, it allowed both roads to secure the benefits of combination, and it protected the Union Pacific from combinations of other lines in the Southwest.

In April, 1901, Harriman was elected chairman of the Southern Pacific's executive committee. At that time Charles H. Tweed was chairman of the board of directors and Charles M. Hays was president. In September Harriman succeeded Hays as the road's president, thus holding the same dual position of president and chairman of the executive committee with the Southern Pacific as with the Union Pacific. This dual executive position provided a very effective setup for a man of Harriman's talents—he had displayed his expertness at both planning and execution on the Union Pacific—for it gave him the opportunity to formulate plans as the chairman of the executive committee and to carry them out as president.

Harriman's position was further strengthened in 1902. In the latter part of that year the chairman of the board and second vice-president resigned to go with Speyer & Company. The position of chairman was abolished, with the result that virtually all the top management and directorate powers were then vested in Harriman. Harriman exercised his voting power to remove some of the former directors and replace them with directors from the Union Pacific. By 1909 seven of the fifteen directors of the Southern Pacific were also serving on the Union Pacific board.

During 1903 there were a great number of resignations, transfers, and promotions among the top-management personnel of the Southern Pacific. Harriman was building a new executive organization for the road.

THE EXECUTIVE PERSONNEL OF THE SOUTHERN PACIFIC

While Harriman changed the composition of the board of directors substantially, in the case of the top management personnel there were

relatively few removals. Edwin Hawley, assistant general traffic manager in New York, and others, who had worked closely with Huntington or who held more or less complimentary titles, resigned under the new régime. The majority of the operating officials, however, remained with Harriman. The reorganization of the executive department consisted chiefly of reassigning and promoting these officials.

The explanation of this approach to management seems to lie in two factors. First, the top operating officials were of high caliber and extremely competent in their fields. Secondly, it took many years to train a good operating man and the supply was, therefore, limited. Consequently, Harriman could ill afford to play favorites in his appointments.

Following are brief biographical sketches of five of the outstanding operating men whom Harriman found on the Southern Pacific when he assumed control in 1901. His regard for their competency is indicated by the positions which they attained in his organization.

Julius Kruttschnitt¹⁴ was born on July 30, 1854, in New Orleans, Louisiana, where his father was the German Consul. He was graduated as a civil engineer from Washington and Lee University, Virginia, at the age of nineteen. He entered railroading in 1878 and by 1883 was chief engineer and superintendent of Morgan's Louisiana & Texas Railroad and Steamship Company. Two years later he was assistant manager of the Atlantic System of the Southern Pacific. In 1895 he was made fourth vice-president and general manager of the entire system.

Kruttschnitt was recognized as one of the outstanding operating officials in the company. One month after assuming the presidency Harriman appointed him assistant to the president of the Southern Pacific Company "with such powers and duties in addition to those pertaining to his present office of Fourth Vice-President and General Manager as may be prescribed from time to time. All officers heretofore reporting to the President will hereafter report to him."¹⁵ In 1904, when Harriman consolidated his management in the "Harriman Lines," Kruttschnitt became director of maintenance and operations with offices in Chicago. This position gave him most of the duties of

¹⁴ Material gathered from Addison T. Busbey, *The Biographical Directory of the Railway Officials of America* (Chicago, 1906); and *Railroad Gazette*, Oct. 25, 1901, vol. xxxiii, p. 745.

¹⁵ *Railroad Gazette*, loc. cit.

the president's office except the transactions in financial centers. The *Railroad Gazette* said of this appointment:¹⁶

Mr. Kruttschnitt has been well known to our readers for some years as having an unusually active and broad interest in what we may call the professional side of railroading. He has done a great deal to ascertain the methods by which economies may be secured in administration and operation and has made many special studies along lines on which the information of general managers is often more or less superficial and secondhand. Doubtless this has come partly from the fact of his being a civil engineer by profession and thus having the habits and training of that profession.

John C. Stubbs¹⁷ was born at Ashland, Ohio, in 1847. He entered railroading when he was twenty-two and came to the Central Pacific as chief clerk in the general freight offices at Sacramento, California. By 1873 he was general freight agent and by 1884 he was general traffic manager. In 1885 he was transferred to the Southern Pacific in the same capacity. He had been third vice-president of the latter road for twelve years when, in 1901, Harriman gave him the additional duties of traffic director for all the Harriman lines in the Southwest. Stubbs then supervised the activities of the traffic managers of the Union and Southern Pacific, the Oregon Short Line, and the Oregon Railway and Navigation Company from his office in Chicago.

William Mahl¹⁸ was born in Germany in 1843. He came to the United States and entered the mechanical department of the Louisville & Nashville Railroad in 1860. He then worked as auditor, purchasing agent, and general superintendent of the Louisville, Cincinnati & Lexington Railway and at the same time was financial agent for the Texas & Pacific Railway. In 1882 he became associated with Huntington, and until the time of Huntington's death he was a general agent, an assistant to the president, or the comptroller in many railroads and enterprises in which Huntington had a controlling interest. Following Huntington's death he was promoted to vice-president as well as comptroller of the Southern Pacific.

Mahl was characterized as having ability, industry, and integrity, all backed by thorough and broad experience in railroading. He pioneered in and developed the idea of designing and preparing railway statistics in such a way as to make them serve as operating lessons to those interested. The annual financial reports which he prepared

¹⁶ *Loc. cit.*

¹⁷ Busbey, *op. cit.*

¹⁸ *Ibid.*

were models of completeness and accuracy. Many considered him to be the top railway comptroller in the country.

Harriman evidently concurred with this opinion, for by 1906 Mahl was comptroller not only of the Southern Pacific and its proprietary companies but also of the Union Pacific, Oregon Short Line, Oregon Railroad and Navigation Company, Chicago & Alton Railway, and the Pacific Mail Steamship Company. He was also comptroller of the Guatemala Central Railroad. His offices were in New York.

Robert S. Lovett was another man of outstanding ability whom Harriman found on the Southern Pacific.¹⁹ Lovett was born in San Jacinto, Texas, in 1860. He entered railway service when he was twenty-four as local attorney for the Houston, East & West Texas Railway. From there he became, consecutively, assistant general attorney and general counsel for the Texas & Pacific Railway. Under Huntington he was general counsel for the Southern Pacific lines in Texas.

With the advent of the Harriman régime Lovett became general counsel for both the Union Pacific and the Southern Pacific. In 1906 he was director and member of the executive committees of the two roads as well as of the Oregon Short Line and the Oregon Railroad and Navigation Company. He was also president of the Houston & Texas Central Railroad.

Like Mahl, Lovett had his offices in New York. The numerous legal problems confronting a railroad president undoubtedly led Harriman to call on Lovett for assistance. At any rate, Lovett and William D. Cornish (nominally vice-president in charge of the land department of the Harriman Lines) were soon close friends of as well as counselors to Harriman. Since the financial operations were centered in New York, much of their advice was probably on financial matters.

William Hood was born in 1846.²⁰ He was graduated from the scientific department of Dartmouth College. In 1867 he went with the Central Pacific and participated in the difficult engineering work involved in its construction. He worked as an assistant engineer and, later, as an assistant chief engineer on both the Central Pacific and the Southern Pacific. He then became chief engineer for the Central Pacific and the Pacific System of the Southern Pacific Company.

¹⁹ *Ibid.*

²⁰ *Ibid.*

Harriman evidently believed that it was not necessary to set up a central engineering department for his lines, although he did have a consulting service as part of the combination. Consequently, there is no such outstanding evidence of his evaluation of Hood as there was in the case of the operating officers. However, the fact that Hood remained chief engineer of the Southern Pacific during the whole of Harriman's administration attests to the value of his knowledge and experience to the company in the rebuilding program which Harriman instituted.

Thus it is clear that the purchase of control of the Southern Pacific not only brought Harriman a railroad with vast potentialities, but it also brought an outstanding group of executives under his direction. That he recognized their competency and placed them in positions where they would be of most value to all his lines, as well as to the Southern Pacific, was to Harriman's credit.

However, much of the credit for the excellent management of a transportation system as vast as the Harriman Lines must be given to the above-mentioned men. Without their contributions to, and their execution of, Harriman's plans, the consolidation would not have been so successful. The fact that his two top officials in Chicago (Kruttschnitt and Stubbs) and one of his most intimate advisers (Lovett), not to mention his comptroller (Mahl), were Southern Pacific men shows that Harriman had not found such exceptional talent in the Union Pacific or in any of his other roads.

THE HARRIMAN LINES ORGANIZATION

It would be impossible to understand the operation of the Southern Pacific as an isolated company during the Harriman administration. One of the reasons for the merger of the Union Pacific and Southern Pacific managements was to secure the benefits and economies of the consolidation of certain important functions. Therefore this section deals with these consolidated functions and their effects upon the Southern Pacific Company and, to some extent, the network as a whole.

First of all, it should be understood that the title "Harriman Lines" did not refer to a corporate entity or any form of holding company. The ultimate control of the various railroads lay with the Union Pacific by virtue of its stock ownership in the other roads. "Harriman Lines" was merely the name attached to all the lines under Harri-

man's control when they were spoken of as a group. Legally each individual railroad remained a separate corporate entity. Practically, however, the roads were operated like autonomous divisions of one large system, subject only to certain centralized standards and staff controls.

The primary reasons for Harriman's not absorbing all his railroads in one company seem to be as follows: (1) It would have been impossible for one man to manage and be responsible for any of the major departments in a system the size of the Harriman Lines. (2) Geographical differences in construction, operating, and traffic requirements of the various roads made it possible to handle many things more efficiently locally. (3) It would have been impossible for Harriman and his financial backers to raise enough money to purchase all of the stock; furthermore, ownership of thirty or forty per cent of the stock of each road gave the same power as complete ownership without the full capital outlay. (4) From a public-relations viewpoint, an attempt to absorb all the roads in one company would have met resistance from civic, stockholder, and employee groups who had long-standing interests in the individual companies. (5) Finally, government reaction to complete absorption of all roads by one company would undoubtedly have been more immediate and more hostile than it was to the gradual federation of the Harriman Lines.

Harriman, as president of the Union Pacific and the Southern Pacific, had his headquarters in New York City. In this office all financial transactions and all matters subject to his final approval, as well as the long-range plans of the Harriman lines, were handled.

Unlike the situation in most roads, there was a scarcity of vice-presidents in the head office. As will be brought out, Harriman located his officials where they would be in the closest possible contact with their responsibilities. Since New York was the financial center of the nation, Harriman, Mahl, and Lovett, who, respectively, held the financial reins, supplied the necessary financial information, and gave legal information and advice, were in that office.

Information on matters of direct finance, income expenditures, and so on, came from the various properties and financial centers to Mahl. He digested the information and submitted it, along with his advice and recommendations, to Harriman. Since Mahl was well acquainted with the properties and always considered matters in long-range terms, Harriman put great value on his reports as a basis for final decisions. By delegating the initial consideration of financial matters

to Mahl, Harriman was able to relieve himself of functions which ordinarily occupied most of the time of railway presidents.

In 1904 the difficulty of controlling so large a combination, roughly 54,000 miles of rail and water lines, led Harriman to institute a unique system of management centered in the system's Chicago office. He created the positions of "director of maintenance and operations" and "traffic director" and, as previously noted, appointed Kruttschnitt and Stubbs, respectively, to fill them. These were essentially staff positions, each with a well-defined sphere of duty. To Kruttschnitt and Stubbs, Harriman delegated the administrative control and supervision of the Atlantic Steamship Lines and of all the completely owned rail lines.²¹ The two officials occupied adjoining offices in Chicago, midway between the headquarters and the western terminus of the lines, and reported directly to Harriman in New York.²²

Each of the individual companies (the Southern Pacific, for example) had its own vice-president and general manager, men of long experience and high executive ability. As operating head of his particular company each was the final authority for handling the property as it stood, but the intercompany traffic relations and physical changes in the property were subject to the approval and control of the Chicago office. The whole system operated on the theory that the different properties should be brought into close relationship with each other yet preserve a full measure of independence.²³

It can readily be seen that a great deal of teamwork and coöperation between the Chicago office and the general managers and among the various general managers themselves was required to make this organization function as effectively as it did. Mere controls were not enough.

Education was one of the primary means used to encourage and secure the necessary teamwork. Because of its broader viewpoint, the Chicago office was chosen as the center of the executive education program. The program was carried out chiefly by analyzing and comparing statistics and reports from and about the properties, or "divisions" as they were called, and then communicating the con-

²¹ Except in Texas, where the law required a local vice-president to report directly to the president.

²² Material for this section was obtained from the *Railroad Age Gazette*, vols. xlvi and xlvii.

²³ *Railroad Age Gazette*, vol. xlvi, was the main source for this paragraph.

clusions reached to the divisions by correspondence or by personal, on-the-spot interviews.

The Chicago office also supplied special representatives (e. g., a consulting engineer was a permanent member of the Chicago staff) to aid the divisions with particular problems or to introduce new methods. Occasionally a man who had conceived a new idea on one division would be sent, as a special representative, to introduce it to other divisions where it was applicable.

All information of possible value to the various divisions was secured and sent to them by the Chicago office. Furthermore, to encourage the interchange of ideas and information the division officials were sent on periodic fifteen-day trips over other divisions. Also, the semiannual meetings of the general officials were held in different cities so that the officials could observe and appreciate regional differences. At these meetings the officers were encouraged to take as much interest in corporate reports, construction, public relations, et cetera, as they did in operations.

In addition to an educational program for division officials, the Chicago office instituted a training program to prepare selected young men for eventual positions in operating departments. As mentioned previously, railroads had a difficult time securing eligible men to fill official operating positions. Julius Kruttschnitt was interested in this problem, and it was largely through his efforts that a training program was developed.

The course consisted of work, instruction, and reading. Its forty-two months' duration was divided into eight periods as follows: six months in station service, nine months in maintenance of way, six months in the master mechanic's office, five months in the signal engineer's office, two months in the store department, four months in the accounting department, and eight months with the trainmaster. The students were graded and had to maintain a certain average grade.

In 1909 there were only twenty-five students in the course, and there was difficulty in obtaining qualified men despite the good pay (\$80 to \$100 per month) during training and the future career opportunities. This suggests that even by 1909 railroading had lost some of its attractiveness to ambitious young men.

The functions connected with Kruttschnitt's position as director of maintenance and operations were as broad as his title implies. It might be said that they consisted of investigating, supervising, cor-

relating, standardizing, and authorizing all new construction and all relations between the divisions with the exception of traffic relations. The problems of actual administration were left to the individual divisions. Most of the communication downward consisted of advice and suggestions; comparatively few positive instructions were given.

As previously noted, however, the division general managers did not have final authority over physical changes on the properties. Although they could supervise authorized construction, they passed plans for all physical changes, even minor ones (construction of sidings or small stations, for instance), on to Kruttschnitt as recommendations. The Chicago office reviewed the merits of the change proposed not only in relation to the particular division but in its relation to the entire Harriman system as well. Kruttschnitt then sent the matter and his recommendations on to New York where "they would be gone over by Mr. Harriman in groups, with incredible rapidity, and yet with full knowledge of all the subject matter before him. He would pass upon a million dollars' worth of improvement work, scattered over 10,000 miles of railway, in fifteen minutes, and this not in a perfunctory manner, but with full understanding of detail."²⁴

There were complaints that this system resulted in unnecessary delays in certain small but important improvements. However, it did give Kruttschnitt and Harriman a picture of the condition and growth of the lines that they could not have obtained so quickly elsewhere.

Once the project had been approved, an "authority for expenditure" was issued and the work could begin or the purchase be made. These approved requisitions expired yearly; if the work or purchase was not completed by then, a new authority for expenditure was required. This procedure gave the Chicago office a yearly check on the progress and worthwhileness of the project.

In addition to the yearly check on capital expenditures, Kruttschnitt received monthly letters of general information from each of the divisional general managers. These letters were compilations of similar reports from the divisions' subordinates.

Another source of information that aided Kruttschnitt to evaluate operations on the divisions was the small statistical bureau which functioned under the supervision of the assistant director of main-

²⁴ *Railroad Age Gazette*, Sept. 17, 1909, vol. xlvii, p. 484.

tenance and operation. This bureau supervised and checked the accounting departments of the division managers and prescribed methods and forms for accounts. In order to secure a more detailed observation of and check on the divisions' accounts, the bureau increased to 161 the 116 operating accounts required by the Interstate Commerce Commission.

In order to make as slight as possible the infringement of this accounting and statistical supervision over the powers of the division superintendent, the division accounting departments were under his supervision and were on his payroll.

Even before the establishment of the office of director of maintenance and operation in 1904, the Harriman Lines were adopting common standards for structures and equipment wherever possible. In 1903, for example, detailed plans and instructions for a standard railway bridge were issued to the divisions. When the Chicago office was set up, these standards came under its jurisdiction.

In 1905 the *Railroad Gazette* commented:²⁵

In the case of the so-called "Harriman Lines" the consolidation of several great railroads into one group or system has been characterized by more than a mere financial transaction in securities and perfunctory conjoint action on the part of the presidents and directors of the various constituent parts of the system in exercising control over the policy of the whole group. The operating, traffic, engineering and motive power departments, of each of the roads forming a part of the system, have been welded together into what is practically one organization while retaining their respective identities. Not the least important feature of this coöperative policy has been the adoption of standards for the whole system for such work as bridges, track, cars, locomotive details, etc. These standards have been adopted only after long consultation and discussion among all the officers of the different roads, and they embody the best practice of all the lines. The saving in construction and repairs resulting from the use of a common standard on all the roads is self-evident.

Adoption of common standards for locomotives and cars as a policy for motive-power management was not so extensive on any other great system. The usual practice was to let each line in the system determine its own standards according to whatever was considered to be best suited to local conditions. However, this practice led to many standards that were more an expression of the whims and personal opinions of their selectors than a requisite for efficient and economical operation.

²⁵ *Railroad Gazette*, Mar. 17, 1905, vol. xxxviii, p. 248.

Many of these old standards and practices had been in use so long that they were practically customs. For example, before common standards had been set up and each line had chosen its own, there were fifty different patterns of switch frogs used on the Harriman Lines. After the application of common standards the fifty were reduced to four, with an increase in switch efficiency. The railroads had already become burdened by "force of habit," which probably prompted the *Railway Age* to say, "It takes a great deal of courage and disregard of personality to wipe out such customs as relentlessly as Mr. Harriman has done, but it cannot be doubted that the ultimate result will be beneficial."²⁶ At any rate, the adoption of common standards for the Harriman Lines instituted reforms which were badly needed on western railroads.

The common standards for the Harriman Lines were adopted at periodic meetings of the heads of departments and companies concerned. Recommendations of standards on the basis of mechanical, practical, and commercial considerations were made by these committees. The general managers of the divisions reviewed these recommendations and added suggestions of their own. The director of maintenance and operation had the final authority over the adoption of standards. Upon his approval, detailed specifications (and drawings, if necessary) were prepared and issued to all parties concerned on the various divisions. The standards adopted were always open to review, and revisions did not involve too much red tape.

The adoption of common standards made it possible to centralize some of the purchasing for all the lines at Chicago. A director of purchases was appointed, his function being to fill the requisitions for new equipment that were approved by Kruttschnitt's office. A large amount of the purchasing was retained in the divisions, however, inasmuch as many items (small orders, ties, lumber, et cetera) could be purchased more advantageously in local markets; also, many purchases were made locally from jobbers who shipped over the lines.

W. V. S. Thorn, director of purchases, listed several advantages to common standards and centralized purchasing in an article which appeared in the *Railroad Gazette*.²⁷ Among these advantages were: (1) common standards cut to a minimum the variety of similar articles purchased; (2) since much of the standard equipment was interchangeable, warehouse stocks could be cut down; (3) the time

²⁶ *Railway Age*, Aug. 24, 1906, vol. xlii, p. 224.

²⁷ *Railroad Gazette*, May 1, 1908, vol. xlv, pp. 610-616.

spent in securing information on equipment to be purchased was reduced; (4) competing manufacturers could be furnished complete specifications and drawings—thus, the allowance for uncertainties could be reduced and costs figured closer; (5) the larger purchases possible with common standards and centralized purchasing made it possible to get the manufacturers to share with the railroads the economies obtained in long manufacturing runs; (6) standard equipment could be transferred from division to division according to need; (7) the uniform parts on standard equipment were as interchangeable as possible and, therefore, equipment could be repaired easily when it was away from its home line.

As an aid to the purchasing department and to help in the revision of standards, the Chicago office maintained both mechanical and chemical laboratories plus a corps of experienced inspectors.

The pooling of the equipment of the various divisions also came under the jurisdiction of the director of maintenance and operation. The pooling arrangements of the Harriman Lines brought about a 54,000,000-mile reduction in empty-car movement in only two years. This remarkable reduction was accomplished primarily through a system of detailed reports on the whereabouts of all the equipment.

A general manager in each division received detailed daily reports on the location of the entire equipment in his system. Copies of the daily equipment compilations for the tenth, twentieth, and thirtieth of each month were forwarded to the director of maintenance and operation. A glance at the footings of these reports showed the condition of car balances at interchange points, foreign cars on the lines, and Harriman cars on foreign lines. Generally all but 1 or 2 per cent of the equipment on the Harriman Lines (75,000 freight cars) could be located from these footings.

The larger movements of cars were handled through the assistant director of maintenance and operation in Chicago. No detailed car records were kept there, however; that would have destroyed the local autonomy policy and made the director the general manager of an 18,000-mile system, an impossible job for one man.

The functions of the traffic director's department and its relation to the entire organization are best described for the purpose of this article by quoting the *Railroad Age Gazette*:²⁸

Traffic arrangements and agreements and the development of existing resources are, in effect, a complicated and highly technical form of salesman-

²⁸ *Railroad Age Gazette*, Sept. 17, 1909, vol. xlvii, p. 484.

ship, differentiated quite sharply from what may be called the department of railway strategy, that opens up new country, and from the physical and financial control of existing lines. Mr. Harriman probably did less personal directing in the traffic department than in any other part of the organization of his properties. He had high confidence in Mr. Stubbs, and the nature of his relations with this branch of the business was that of consultation and coöperation rather than direct control.

EXPANSION AND IMPROVEMENT OF RIGHT-OF-WAY AND EQUIPMENT

Almost immediately after gaining control of the Southern Pacific, Harriman instituted an extensive program of rebuilding and re-equipping its lines.

Harriman's first step was to rehabilitate the old Central Pacific so that it would be able to carry as much traffic on the Ogden-to-San-Francisco run as the reconstructed Union Pacific could carry on its line from Omaha to Ogden. He had traveled on the Central Pacific several times and had a good idea of what would be required to fulfill his program. In order to substantiate his opinions and gain broader information on which to base his presentation to the executive committee, he called Julius Kruttschnitt, then general manager of the system, to New York. Kruttschnitt later described the conference as follows:²⁹

We tried to discuss our business at the office, but Mr. Harriman was too frequently interrupted by callers. He asked me to his house that night to dine. After dinner he called for blue-prints, maps, and statistics covering the contemplated reconstruction work in Nevada and Utah. He asked innumerable questions with great rapidity, always touching the crucial points. Frequently he would not wait for me to finish a sentence, but would dash off on another question. He wanted to know the advantages of one method over another; the economies to be effected, the increase in capacity to be derived, etc., etc., etc. The swiftness with which he covered the plans was astonishing. We finished the discussion in less than two hours, and thereupon he told me to be at the board room next morning when there was to be a meeting of the executive committee.

The plans called for an expenditure of \$18,000,000 and I supposed that there would be no end of arguing and talking, which would result in approval of only a part of the work. However, Mr. Harriman, in a few words, clearly explained to the committee the general scheme, what it would cost and the advantages that would follow, and recommended the approval of the entire work. It was approved without dissent. Evidently he had absorbed enough in that two hours' talk with me to satisfy himself what ought to be done and

²⁹ Kennan, *op. cit.*, vol. i, pp. 244-245.

to approve the whole thing. As I left for the West, I wondered what manner of man it was who in a few hours' talk could digest the details of an \$18,000,000 reconstruction work along a thousand miles of railroad through mountainous country, expound the general principles of the plan to his executive associates in the course of a few minutes, and obtain the seal of financial approval. I asked him what speed we should make—over what period of time we should spread the expenditure. He replied, "Spend it all in a week if you can."

Shortly after the expenditures for the reconstruction had been authorized, in a speech at a San Francisco banquet Harriman indicated that he would extend his reconstruction policy to the entire Southern Pacific system by saying:³⁰

Since I have been charged with the management of the Southern Pacific and all the lines included in that system, by the perseverance of the officers of the Southern Pacific, we have placed the improvements before the committee and have succeeded in getting authority to expend this year, or to begin improvements this year, which will amount to about \$20,000,000, most of which will go into effect this year, or the results of it. That means the improvement of the coast lines southerly from here to Los Angeles, the finishing of the tunnel through Simi Pass, the improvement of the lines from Los Angeles east to El Paso; the elimination of curvature, the improvement of bridges, the laying of new rails.

Harriman went on to say that the most striking improvements would be on the Central Pacific, where grades would be reduced from 97 to 21 feet per mile and curves from 10 to 4 degrees (and not very much of the latter).

The rebuilding program proceeded under the direction of General Manager Kruttschnitt and the immediate supervision of Chief Engineer William Hood.

The annual report of the Union Pacific for June 30, 1901, included a comment about the entire re-equipping and rebuilding program. It stated:³¹

Many radical improvements on the Southern Pacific have been inaugurated and are being carried forward. These embrace a comprehensive scheme of placing these lines in a position to render a better service at a reduced cost, and include the reduction of grades and curvatures, new alignment to secure economical operation, and the purchase of new and better equipment and motive power. The nature of these improvements corresponds with those already completed on the Union Pacific, which have shown such satisfactory results in service and net revenue. The extensive use of oil as a more economical fuel than coal also necessitates large expenditures, which should result in substantial economies.

³⁰ *Railroad Gazette*, May 16, 1902, vol. xxxiv, p. 359.

³¹ *Ibid.*, Jan. 3, 1902, vol. xxxiv, p. 9.

Harriman's general policy on the Southern Pacific was following that employed on the Union Pacific. He was spending money to save and make money. In the case of the Southern Pacific, however, much of the reconstruction work had already been laid out under Huntington's administration. Huntington had realized the need for the work, but he did not have the financial resources that allowed Harriman to do all the work in as short a time as possible (the Central Pacific was rebuilt in less than three years).

One of the projects laid out by Huntington's administration was the Lucin cut-off, a trestle shortcut across the Great Salt Lake in Utah, which would save 32 miles of line. The Harriman group in 1901 had abandoned this project in favor of alternative routes which they had surveyed. After a more thorough study of the project, however, the Lucin cut-off, which had been considered impractical because of the effect of the shifting lake-bed on the trestle, was reconsidered. Construction began in March, 1902, and, after two years of overcoming great difficulties, the cut-off was open to service.

Another project which had seen preliminary work done under Huntington was the Bayshore cut-off between San Francisco and San Bruno, a distance of 10.5 miles. The route would avoid the grades of the old line which were so steep that many trains required a helper engine. Some grading on the cut-off had been in progress in 1900 and the line was scheduled for completion in November, 1901, but it was abandoned upon Huntington's death. Under Harriman, construction on the cut-off was started in October, 1904, and opened for traffic in December, 1907. The job involved digging five tunnels totaling 10,000 feet of track, numerous cuts and fills, and several bridges. Estimates of the cost of the project vary from \$800,000 to \$1,000,000 per mile.³²

The Southern Pacific's scenic Coast Line from San Francisco to Los Angeles had its first link completed under Huntington in 1894. By 1901 it was open for traffic as far south as Santa Barbara. The line is scenic, but the rugged territory covered made construction work slow and difficult. The final link into Los Angeles was completed in 1904.

New construction was undertaken on the various lines whenever it would save time and distance. However, on the Central Pacific lines the savings were quite small (e. g., the Lucin cut-off) because the

³² Erle Heath, *Seventy-Five Years of Progress* (San Francisco: Southern Pacific Bureau of News, 1945), p. 21.

original line was constructed on the best route and not, as many people had been led to believe, for the sake of land grants and subsidies.

As can be seen from the major projects outlined above, a large part of the construction and rebuilding completed between 1901 and 1909 was aided materially by prior planning and construction carried out by Kruttschnitt and Hood under Huntington's direction. Much of the speed with which the projects were completed under Harriman can be attributed to this prior work and to the fact that Kruttschnitt and Hood were men who knew what to do; all they needed was the financial backing. To Harriman goes the credit for seeing the value in these projects and presenting them to the financial people in such a way that ample funds were provided for their completion. Furthermore, the common standards which were applied to various phases of the construction on the Harriman Lines greatly aided the development of a well-integrated transportation system covering 18,000 miles of lines instead of just the 9,000 miles of the Southern Pacific lines.

In addition to rebuilding and new construction to save time, distance, curves, and grades, the Southern Pacific purchased new lines whenever they would serve a similar purpose. In 1906 the California Northeastern Railroad, which had under construction a line from Weed, California, to Klamath Falls, Oregon, was purchased. This gave the Southern Pacific a new "Shasta" route between San Francisco and Portland which not only saved fifty miles but also avoided the excessive grades and sharp curves on the former route through the Siskiyou Mountains, a costly and difficult run. The new line also opened up the rich area of eastern Oregon to traffic.

The fact that Harriman was a builder as well as a rebuilder is illustrated by the 1,870 miles of track added to the Southern Pacific system between 1900 and 1910.³³ Furthermore, the amount of money which he spent on rebuilding and improving was sufficient for an original building job, even allowing for the price rise. For example, the Lucin cut-off alone cost around 14 per cent of the estimated original cost of the entire Central Pacific line.

New lines were built and old lines extended wherever the traffic would bear the costs of construction and operation. An outstanding example of a new line was the railroad down the west coast of Mexico authorized by the Mexican Government in 1905. By 1908 there had been constructed 283 of the 775 miles authorized. In several cases,

³³ *Loc. cit.*

where traffic would support only one road, lines were built as joint projects with another railroad—for example, with the Santa Fe, to California oil fields and redwood timber stands, and with the Western Pacific in Nevada.

Construction during Harriman's management was not always conducive to friendly relations between railroads, however. Two examples follow.

In 1903 the Santa Fe began to build a line through Gila Cañon in Arizona. The Southern Pacific had planned to use this route for its proposed line from Yuma to Lordsburg. Both roads began building, and clashes between the rival construction gangs were frequent. The controversy was ended when the Santa Fe, fearing an adverse decision on the litigation before the Supreme Court, sold its line to the Southern Pacific.

Conflict occurred again in 1905 when James J. Hill, Harriman's old rival, invaded the almost private domain of the Union Pacific and Southern Pacific in Oregon. He started construction on a railroad from the Columbia River up the Deschutes River to the small town of Bend. Harriman, suspecting this to be the start of a Hill main line to San Francisco, sent a large crew into the area to build a parallel line. Much of the battle was fought in the courts. Nevertheless, there were enough fist fights, night raids, and attempts to dynamite equipment by both construction crews to make the affair reminiscent of the early eastern railroad wars. Men were killed and equipment wrecked before a truce was effected whereby Hill agreed to continue his line no farther than Bend. The truce applied only to central Oregon, however, and the construction battle continued, though less violently, in other parts of the State until after Hill's death in 1916.

Rebuilding, new construction, and construction wars were not the only features of Harriman's rehabilitation program on the Southern Pacific. With the adoption of common standards for cars and locomotives, the Southern Pacific acquired essentially the same type of heavy rolling stock and powerful motive power to be found on the Union Pacific.³⁴ Between 1901 and 1909 the capacity of the average

³⁴ Not all equipment was the same on both lines. On this subject, Kennan (*op. cit.*, vol. i, p. 277) said: "Sometimes Mr. Harriman was disposed to carry this policy of standardization too far, as in one case where he proposed that classes of locomotives on the two systems be made uniform. When, however, his director of operation showed him that this was impracticable, and that it would result in a decrease of efficiency on certain parts of the lines where engines of an exceptional type were needed, he yielded to Mr. Kruttschnitt's better judgment."

freight car was increased from 27 to 37 tons and the average train-load from 305 to 472 tons.³⁵

The combination of new equipment and new roadbed had very tangible results. In 1909 the freight carried exceeded by 10,000,000 tons the amount carried in 1901, yet there was a reduction of 3,400,000 in the number of freight-train miles run.³⁶ Since it was impossible to increase to such an extent the car and train capacity for passenger traffic, those figures are not so striking. "Nevertheless, 606,000,000 more passengers were carried one mile in 1909 than in 1901, with an addition of only 5,800,000 to the passenger-train mileage."³⁷

The improvement of the system did not stop with the initial rebuilding; in fact, a program of constant improvement was followed. Coal was replaced by the more efficient and economical oil as locomotive fuel. Automatic block signals were installed until, by 1909, around 4,000 miles of line were so protected. The use of safety devices on locomotives and cars (e. g., air-brakes and automatic couplers) was increased and improved. The suburban lines in Oakland and Alameda, California, were electrified. New stations and right-of-way structures were built and old ones improved. New ships were added to the Atlantic fleet, and the acquisition of other steamship lines on the Pacific Coast gave the Southern Pacific a practical monopoly of the coastwise traffic.

A full appreciation of the extent of the rebuilding, re-equipping, additions, and betterments which were carried out on the system during Harriman's administration can be obtained from the following itemized statement of expenditures:³⁸

Extensions:

New lines or branches built or bought . . .	\$114,513,383
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\$114,513,383

Track Betterments:

Lucin cut-off	\$8,358,833
Bay Shore cut-off	9,273,055
Montalvo cut-off	2,425,911
Other line changes and reconstruction . . .	10,761,484

³⁵ *Ibid.*, p. 273.

³⁶ *Loc. cit.*

³⁷ *Ibid.*, p. 274.

³⁸ Source of figures: *ibid.*, pp. 257-258.

Second main track	2,699,532
Side track	7,293,407
Bridges and trestles	6,298,059
Automatic block signals	2,835,278
Ballast	2,962,206

Total track betterments	\$52,907,765
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New Equipment:

Rolling stock, 9,919 locomotives and cars	\$32,061,304
Steamers, ferry boats, etc.	8,984,282

Total new equipment	\$41,045,586
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Buildings and Real Estate:

Terminals and land	\$13,896,985
Station grounds and right of way	3,235,988
Station buildings and fixtures	1,878,217
Pumping stations	1,058,294
Fuel stations	1,827,396
Shops, machines and tools	3,332,711
Miscellaneous structures	1,611,337
Various betterments, docks, engine houses, fencing, etc.	6,636,756

Total buildings and real estate	\$33,477,684
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Total Expenditures	\$241,944,418
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Even at today's price level, \$241,944,418 is a tremendous expenditure for one company. However, the results justified the action. Julius Kruttschnitt, speaking for management, said:³⁹

Through a progressive policy and the assistance of an established credit [that of the Union Pacific] enormous sums were expended for betterments and additions; the physical condition of the roads was vastly improved; grades were reduced and curves eliminated; the lines were shortened wherever possible; facilities of all kinds were enlarged; the heaviest and most powerful types of locomotives were freely supplied, and the modern passenger and freight cars furnished were of standards not surpassed on any railroad in the United States. As a result, the general service to the public was much improved; the danger from accidents was reduced; the traffic was handled without increase in rates, even during periods of rising prices for material and labor, and the capacity of the roads was so increased that they carried for the public a volume of business that it would have been impossible to move at all if the improvements in facilities had not been made.

³⁹ *Ibid.*, pp. 258-259.

While these changes, made under the administration of Mr. Harriman, improved the return to the stockholders through the development and transportation of a much greater volume of business at a lower cost, they were equally beneficial to the public in providing a safer, straighter, and more comfortable road and better equipment for passenger travel, as well as increased capacity for freight with more certainty in movement and promptness in delivery.

In a report of the Interstate Commerce Commission, which was not too friendly toward Harriman interests, is the comment:⁴⁰

It has been no part of the Harriman policy to permit the properties which were brought under Union Pacific control to degenerate and decline. As railroads, they are better properties today—with lower grades, straighter tracks, and more ample equipment—than they were when they came under that control. Large sums have been generously spent in the carrying on of engineering works and betterments which make for the improvement of the service and the permanent value of the property.

LATER OPERATING ORGANIZATION AND CONTROLS

The problem of effectively controlling over 9,000 miles of line and around 100,000 employees necessitated revision of the operating organization of the Southern Pacific. In the latter part of the Harriman administration the "unit" system of organization, first introduced on the Union Pacific by a special representative of the Chicago office, Major C. D. Hine, was substituted for the "departmental" system still used by most railroads.

Under the old (departmental) system, the Southern Pacific operating department had had three subdivisions: transportation, mechanical, and engineering. Each subdivision had a head supervisor, with power and responsibility only within his own department, reporting to the general manager of the railroad. The jurisdiction of each department went vertically down through the entire company so that the superintendents of the system's various lines (Coast Lines, Atlantic System, etc.) were responsible to all three of the department heads. This triple responsibility resulted in a group of top officials each of whom was experienced in only one phase of operation (transportation, engineering, and so on). Consequently the interchange of ideas and aid between departments was slight, and the railroad often had to go outside the organization to secure experienced division superintendents and general managers.

⁴⁰ Franklin K. Lane, "Consolidation and Combination of Carriers" (Washington, Apr. 5, 1907), p. 281.

Furthermore, the volume of records and reports required and duplicated by this organization was tremendous. Division superintendents were required to prepare for department heads reports which were of no use to the divisions and which merely added to the superfluous paper work, delay, and confusion of interdepartmental relations. Harriman, on seeing an officer at a desk covered with papers, remarked, "I want to find him leaning back in his chair with his feet on the desk—thinking! thinking!"⁴¹

The unit system of organization set up by Major Hine (and still in use today) divided the railroad into units, each with its own superintendent responsible only to the general manager. The jurisdiction of each superintendent was fixed by the amount of territory he could visit in one day. In terminal areas the superintendent's territory might not extend far beyond the terminal itself, while a unit 650 miles long was not uncommon in the Arizona desert.

The ideas of home rule and coöperation between divisions which applied to railroads under the Chicago office were extended to the units under the general manager. The unit superintendents were encouraged to visit other units and roads, interchange information, exercise individuality and initiative in operating their units as they stood, rotate subordinates to broaden their experience, meet with other unit heads in frequent conferences, and make full use of the facilities of the Chicago office.

As to the units themselves, the position of department supervisor was abolished and a new title of assistant superintendent established. Assistant superintendents were responsible for the same functions which they had performed as department supervisors, but, as their title would imply, their authority was increased to cover all operations of the unit. For example, an assistant superintendent who headed the engineering department in the unit could exercise authority over men in other departments without first getting approval from the other assistants. All assistants reported only to the unit superintendent instead of, as previously, also to the division department heads.

Each assistant superintendent spent four to six months as senior assistant to the superintendent. The superintendent was required to spend fifteen days each month on the road, and previously his work at the office had been done by a chief clerk; inasmuch as the clerk seldom

⁴¹ *Railroad Age Gazette*, June 18, 1909, vol. xlvii, p. 1301.

had the executive ability to perform the superintendent's functions satisfactorily, this arrangement was unsatisfactory. The senior assistant superintendent at the office, under the new system, acted for the superintendent in his absence and as an administrative assistant when he was present.

The rotation of assistant superintendents gave them invaluable experience in the over-all operation of the unit. This, in turn, gave the railroad a larger reservoir of experienced men from which to draw new superintendents. Formerly it had been almost impossible for a man from the mechanical or engineering department to become a general superintendent or manager. The transportation department was the only one that offered sufficiently varied experience to prepare men for the over-all jobs. On the other hand, this experience was necessarily narrow in the mechanical and engineering fields. The new system gave the necessary balance of experience.

The assistant superintendents were located at the unit headquarters. It was forbidden to have any file outside the central file and all correspondence, except interdepartmental, was channeled through the senior assistant. All communications from within the unit were addressed simply "Assistant Superintendent," whereas those from outside were addressed "Superintendent." This procedure eliminated confusing titles and duplicate communications; also, it insured the arrival of messages at the central channeling office. It was estimated that the amount of correspondence was cut 40 to 50 per cent.

The procedures involved in the unit system were extended to the lower operating levels. For instance, at terminals the roundhouse foreman also assumed the duties of yardmaster except where the traffic was too heavy; in that case one of the former department superintendents (e. g., roundhouse foreman or yardmaster) became an assistant to the other.

The ideas embodied in these various reforms were not all new. However, the Harriman railroads were the first to break away from the "traditional" procedures and practices and work out a simplified system.

In addition to operating and financial information, there were two major reports required of the Southern Pacific under the Harriman system. The first was a weekly report on crop conditions in the contiguous territory. The information for this report originated with station agents based upon their discussion with farmers. From this information the division officer drew up the initial report which was

sent to Chicago. All the division reports were edited and consolidated into a summary of about twenty-five hundred words, which was forwarded to New York and presented to the president and board of directors. As the reports passed up the line from the station agent to the president the information could be used as a basis for determining business conditions (in the predominantly agricultural area served by the lines), and thus traffic potential, and so on, could be estimated. The second report originated from the press releases in each territory. The Chicago office arranged for each general manager to receive practically all the periodicals and papers published in his division. From these a record of the general attitude of the press and the public toward the railways and corporations was compiled. Twice monthly, a synopsis of the current attitude was telegraphed to the director of maintenance and operations. Briefs of the consolidated reports of the divisions were sent to New York.

Through the medium of both these reports, not only were the Chicago and New York offices kept informed, but the compilation of the reports also kept the divisions acquainted with important developments in outside business and public relations.

In 1904 a control over train service was established by the creation of the office of inspector of train service with offices at the division headquarters in San Francisco. The announcement of the establishment of this staff office listed the following primary duties of the inspector.⁴²

He was to observe and report on the following:

1. Condition of passenger train equipment and the general appearance of trains; cleanliness and freshness of coaches both inside and out; ventilation; condition of toilets, drinking water; lighting and heating apparatus; windows; plush and seat fixtures, etc.
2. Condition of equipment and character of service in sleeping and dining cars.
3. Condition of waiting and baggage rooms and toilets, and treatment of the traveling public at stations.
4. Respect paid to flagging rules and signals; condition of train and locomotive markers, switch lights and targets, fixed station and block signals.
5. Failure to maintain schedules and reasons therefor; excessive speed, etc.
6. The relation of train and station employees to the public; condition of uniforms, badges; attention to duty, etc.

⁴² *Railroad Gazette*, Apr. 1, 1904, vol. xxxvi, p. 251.

7. In general any other matters connected with train and station service not up to requirements.

General reports will be made to the General Manager direct. Questions of detail relating to dining car service will be taken up with the Superintendent of Dining Car Service direct; details relating to other duties prescribed should be taken up with Division Superintendents.

The Southern Pacific not only provided new equipment, but saw to it that the equipment was maintained and run in a manner conducive to the greatest service and safety.

As a means of keeping trainmen conscious of safety rules and as a check on their efficiency in safety matters, the company instituted a series of surprise tests. Test results for 1904 showed 2 per cent of the enginemen engaged in more or less dangerous acts. The percentage would have been higher if all tests had been conducted on the same day. However, compared with other railroads, a 98 per cent showing of satisfactorily safe conduct was good.⁴³

In the event of serious accidents, a division board of inquiry was convened immediately by the division (unit) superintendent. It consisted of the superintendent, master mechanic, resident engineer, or chief maintenance-of-way officer, together with a group of private citizens. They met on the ground of the accident and investigated the wreck, questioned employees and witnesses, et cetera. A report was telegraphed to the general officers followed by a letter signed by the members of the board. A "causes unknown" report was not acceptable until all means of examination had been exhausted. In case the division board could not reach a unanimous conclusion or the report was considered unsatisfactory by the general office, a second board of general officers investigated the accident. In the event that this report was not considered acceptable by the general manager, he was empowered to employ outside expert assistance to determine the causes of the wreck so that the proper discipline or remedies could be applied. The management believed that its investigations resulted in as impartial a review and determination of the causes of accidents as was possible.

As a control over the track and maintenance-of-way work on the various parts of the system, annual track inspections were held. The inspecting party consisted of the general manager of the system or the assistant general managers of the group of lines making up the

⁴³ *Loc. cit.*

system, the engineer in charge of maintenance-of-way, and the superintendent, the resident engineer, and the roadmaster of the unit which the party was visiting.

In common with many railroads in the United States, the Southern Pacific adopted a premium system for rewarding efficient track work on its lines west of El Paso. Two prizes were given, one to the roadmaster with the highest average mark for his district and the other to the section foreman with the highest mark of any section on the system. The results of the annual inspection were distributed in pamphlet form to the men concerned. Comparison of their work with that of others fostered a spirit of competition among the section gangs.

During the Harriman administration numerous improvements in minor details were made. This was probably done on the theory that, since the minor improvements constituted big savings in the aggregate they must not be neglected despite the emphasis on major changes. Just such a case is illustrated by the multiform coupon ticket adopted for use in 1909. One of these tickets could be used for 84 destinations on 25 different roads between the Southern Pacific and a terminal road. The ticket form had only three coupons and two stubs which could be folded so that they were all punched at once. The advantages of the ticket over those previously used were: (1) it reduced the number of forms used; (2) it avoided use of paster and extension forms; (3) it simplified the selling agent's work; (4) it required only one punch, thus saving time for the conductor; (5) it prevented fraudulent altering of the tickets; (6) it gave complete information to the auditor on each road interested in the ticket; (7) and, finally, the use of the auditor's stub gave complete daily information to the auditor of the issuing road.⁴⁴

Another more or less minor change having to do with the collection and auditing of tickets, and at the same time illustrating a result of "home rule" in the units, was the introduction of "train auditors" on the Texas and Louisiana line in 1909. Prior to this change a "train collector," as well as a conductor, was assigned to each passenger train to gather tickets and fares. Under the new system the conductor also acted as a collector. He was subject, however, to occasional visits of the train auditor, who boarded and left the train unexpectedly. Use of train auditors provided the necessary check on collections and also

⁴⁴ *Ibid.*, Aug. 16, 1901, vol. xxxiii, p. 570.

resulted in a saving of labor. The train auditor handled several trains to the train collector's one.

* * * * *

Naturally the entire organization of the Southern Pacific has not been covered in this article, nor have all the numerous improvements, checks, and controls been described. Nevertheless, this sample has shown enough of the changes in organization and controls throughout the company to be indicative of the progressiveness that seemed to permeate almost all phases of the Southern Pacific's operations from 1901 to 1909.

JOHN F. HIPPEN
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A Great Indian Industrialist

JAMSETJI NUSSERWANJI TATA, 1839-1904¹

Jamsetji Tata was once a merchant, like his father, but unlike his father he became a great industrialist. Instead of specializing in one huge concern, he spread out to establish many companies of high quality and strategic importance—the foundation of modern Industrial India. It was in part owing to his work that India was able recently to wage a war on the side of the Allies without much help from Britain.

Tata was not a Hindu nor yet a Mohammedan. He was a member of the relatively small group of Parsees who have done so much for India's economic development. He was one of about a hundred thousand of this group who, living in the miasmatic area of Bombay for centuries, have kept the torch of private business enterprise burning brightly. Whether the high integrity and success of the Parsee group are to be ascribed to the fact that they were originally Persians who fled before the Arab invaders in the eighth century or that they were devotees of the Zoroastrian religion is not for us to say. Tata's religion sharply distinguished between right and wrong, light and darkness, and maintained that some day a Messiah would come to this earth. Tata, however, was not completely orthodox: dying on the Continent of Europe, he preferred to be buried in a mausoleum in London rather than have his flesh eaten to the bone by Indian buzzards.

This fine-looking, high-hatted business man was a person of ideas as to what was best for business rather than a theologian or a priest, although he belonged to one of the Parsee priestly families. He held to the view that the iron and steel industry was necessary for his

¹ Mr. James Hazen Hyde called my attention to Tata by sending me a copy of the *Journal of the Royal Society of Arts* for August 27, 1948, in which an article on Tata appears under the title "The House of Tata—Sixty Years Industrial Development in India" by Sir Frederick James. After reading the article I turned to the book *Jamsetji Nusserwanji Tata, a Chronicle of His Life* (Oxford and London, 1925). This biography was not written by a business historian and is based not on records but on interviews with friends and kinsmen of Tata. Nevertheless the book is interesting and the story is significant. Some more recent facts concerning Tata are to be found in "The House of Tata," *Fortune*, Jan., 1944, pp. 101-104 *et passim*.

country's growth and economic independence. He saw the necessity of building up schools and laboratories for the study and pursuit of science and engineering. He became convinced that hydro-electric power was basic in modern industry and a cultivated existence. He was sure that low-paid labor was not a bargain for the industrialist. He saw clearly that the business man was in effect but a trustee of wealth; that, since he could not take his wealth with him, he should during his life provide for its use on behalf of the Indian people. Tata was more like Andrew Carnegie than like John D. Rockefeller or George Fisher Baker in that he set up his charities without public pressure. In present-day America the tax system is forcing many rich men to establish charitable foundations, but Tata acted of his own free will.

Tata's charities included:

- Tata Memorial Cancer Hospital
- Institute of Social Sciences
- Institute of Fundamental Research
- Chairs in universities

In his early foreign trade with lands farther east Tata used his own wealth, though that was not great because he was still young and his father had failed in the 1860's. While sojourning in England, 1868-72, Tata became interested in cotton manufacture. On his return he purchased an old oil mill and converted it into a cotton mill. Later he founded large and magnificent new mills in the Bombay region. He got capital together by forming corporations which sold shares, and he employed engineers, chiefly British, to run and improve his mills. Local labor was plentiful, but it needed instruction and housing.

His Empress Mills were opened in 1877, the year of Victoria's coronation as Empress. This mill was completely up to date. It had a bonus system and a provident fund. Located in a cotton-growing district, it was a success in itself and a model for others. In 1886 the Swadeshi Mills were opened for the manufacture of finer cloths; the name reflects the Indian nationalist ambition to be self-sufficing.

After building up powerful units in the textile industry, Tata turned to iron and steel, hydro-electric plants, foreign steamship operation, hotels, insurance, and so on. The key to what was undertaken was not the chance for effective integration of functions and high profits, but the development of those industries which Tata thought India needed. Tata was not anti-British, indeed quite the contrary; but he had a vision of a day when India would stand alone.

In 1887 Tatas Sons, Ltd., was formed to finance and manage the industrial empire that was coming into existence. It was made up of Tata, his two sons, and a cousin. In 1945, long after the founder's death, this company in turn formed a subsidiary, Tata Industries, Ltd., to manage the numerous concerns of the group.

In 1947 the total capital of the Tata interests was put at 62 million pounds. About 85 per cent of the capital of Tatas Sons, Ltd., is owned by the charitable trusts which Tata had created.

Tata did much to introduce industrial capitalism in India in place of the old mercantile and petty capitalism; he socialized business as he went along, not simply by creating benefits within a company but also by transferring much of the ownership to charitable trusts. And we in our time have thought we were original in some of this socialization from within!

Tata enjoyed a full life, for he delegated operations to others. He read widely and traveled around the world. (He was at the Chicago Exhibition of 1893.) He was a man of the world who left it much better for his having dwelt in it.

Tata's family, or at least the Parsee group, has lived in the tropical coastal region of India north and round about Bombay for over a thousand years. If environment could be effective, we should assume that all enterprise would have been sweated out of these economic men from Persia. In fact, however, the Parsees remained merchants and now are becoming industrialists. Perhaps those who belittle heredity should remember this instance. The genes and chromosomes of the Parsees have been of a high order, long life, and great persistence. Emphasis on private business means an emphasis on heredity, while emphasis on socialism stresses environment. (I wonder what the students in Tata's Institute of Social Sciences have discovered in this connection.)

Research in business history has been confined largely to America. Attention has been devoted chiefly to American experience. We should always be conscious of the fact, however, that the foreign field of mediaeval Italy, modern Britain, and the recent Orient would probably yield bountiful harvests. We might compare Tata of India with the Mitsui and Mitsubishi of Japan. Perhaps we have in America no exact parallels to these oriental enterprisers.

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Rundell, Bridge and Rundell—An Early Company History

What may well be one of the earliest company histories in English was recently presented to Baker Library by Mrs. Lydia Burgess Brownson, great-granddaughter of George Fox, who compiled the history.¹ This unpublished account of the firm of Rundell, Bridge and Rundell, London jewelers, was written between 1843, the year the firm was finally dissolved, and 1846, the year of Fox's death. Inasmuch as Fox had been with the firm since 1806, he had participated in most of the events which he describes. His intention, however, was not to write business history as we know it today, but rather to entertain the "Nobility, Gentry and the Public in general" with stories behind the supply of jewels and plate to the fashionable world; for Rundell, Bridge and Rundell became the royal goldsmiths, and the partners died rich. But the employees did not fare as well as Fox thought they should, and there is a bit of pique behind his account. There was even the need, though the phrase was later crossed out, "to slave in order to supply the Necessities of himself and Family." Alas, the history was not finished nor published, and now, a hundred years later, it provides an interesting sidelight on the London of the early nineteenth century.

In correct historical fashion, Fox begins with the origins of the firm, which—also in correct tradition—were small and obscure. About the middle of the eighteenth century a certain Hart dealt in toys and fishing tackle in St. Paul's Churchyard, at the sign of the golden salmon. Business prospering, he moved to No. 32 Ludgate Hill, where he added the sale of cheap, light jewelry and box and other combs. He was succeeded by a man named Theed, who took in one Pickett and introduced the sale of plate. Pickett in turn succeeded Theed and took in Rundell, and so the foundations of the soon-to-be-famous firm were laid.

¹ The manuscript consists of fifty sheets, 9¹/₂" x 15", written on both sides, two columns to a page.

Philip Rundell, one of the two heroes of the story, was born in 1747 in Philips Norton, the youngest of sixteen children. He served his apprenticeship with a jeweler at Bath, and came to London in 1769 to work for Pickett at a salary of twenty pounds a year. His employer soon became interested in politics, serving as Alderman in 1782, Sheriff in 1784, and Lord Mayor in 1790. The business was left more and more to Rundell, who began to hope that he might purchase it. His brother Thomas had become a doctor and married a woman of means, so Philip persuaded them to lend him money. Then he caught Pickett in a dissatisfied humor (or so the manuscript implies) and put through the deal. "And thus," writes Fox, "he placed himself at the head of the House which afterwards was to become the object of envy to all the Trade and the wonder almost of the World."

The story's other hero, John Bridge, followed a path remarkably similar to that of Philip Rundell. He was born in 1754 at Piddletrenkhide, Dorsetshire, and was apprenticed to the same jeweler in Bath. He, too, entered Pickett's employ and on Rundell's taking over the business became more and more indispensable. He also had a wealthy relative (a cousin who owned a large farm in Dorset) and borrowed from him the money necessary to enter into partnership with Rundell. Fox, who is not always definite as to facts, gives neither the amount of money nor the date of this event. But Bridge's cousin was in a position to do much more for the firm, for he had become acquainted with King George III, who, also a farmer, admired Bridge's methods. The King was told of the firm of Rundell and Bridge and soon directed all his business there. Royal patronage of course brought with it that of the nobility, and it is from this period that Fox dates the great prosperity of the firm.

Fox does not forget that the general condition of the country, the introduction of new capital, and the ability of the firm to produce were factors in its success. He notes that the renewal of the war with France in 1803 brought with it an advance in rents from which the nobility and gentry profited. The same year Edmond Waller Rundell joined the firm, which became Rundell, Bridge and Rundell. Edmond was a son of Philip's brother, the doctor, and brought with him new capital. By this time the firm had established a manufactory in Greenwich, where it employed the best workmen and artists who could be obtained. Pieces designed by Storr, Flaxman, and by Stothard were produced, found their way into public collections, and

are described in various catalogs.² In 1806, the year that Fox came to work for the company, the salesrooms on Ludgate Hill were enlarged. Here in 1807 the magnificent set of plate made for the Prince of Wales was exhibited, attracting the attention of all high society.

At this point of the start of the firm's prosperity, Fox stops the story to tell something of the partners' habits of work. Rundell, he writes, "was naturally of a violent disposition, very sly, and cunning and suspicious." He was a hard worker, though, and a good judge of jewels. He bought from the French refugees, who were hard up for money, and sold to the English aristocracy. He was generally in the shop from eight in the morning till nine at night, and there even on Sunday mornings. No detail was too small or job too dirty for him to undertake. "We want no Fops or Gentlemen here," he would say; "what we want is plain jog trot Men of business." Yet he seemed to Fox careless about hiring workmen and in the sending of money and jewels. He was usually fortunate in his dealings, but on one occasion, jewels, being sent to Brazil and insured for only half their value, were thrown overboard in a dispatch case when French privateers attacked.

While Rundell handled the shop on Ludgate Hill, Bridge was the outside "contact" man. He was a "complete courtier," well fitted for his visits to royalty and nobility, "beating the bush to drive the game to Ludgate Hill." He was so successful that the firm for a number of years had all the orders it could handle. It was not unusual for work to be going on in connection with orders for fifteen or sixteen services of plate, costing five to thirty thousand pounds each, and nearly as many suits of jewels. Orders for presentation articles for army and navy officers and snuffboxes for the diplomatic corps were also numerous. Often the same snuffbox would change owners several times, on each occasion passing through the hands of Rundell, Bridge and Rundell. The Empress Catherine of Russia was a steady customer for such trinkets, and the firm maintained an agent at St. Petersburg. There were agents, in fact, in most of the large cities of Europe, including Constantinople. Meanwhile, the supply of uncut stones had passed from India to Brazil.

The most famous diamond owned by the firm was the Pigot; its

² John B. Carrington and George R. Hughes, *The Plate of the Worshipful Company of Goldsmiths* (Oxford, 1926), mention several pieces presented to the company by John Bridge and his nephew. E. Alfred Jones, *Old Silver of England and America* (Philadelphia, 1928), describes candlesticks designed by Paul Storr and now in the Victoria and Albert Museum.

story occupies seven of Fox's columns. His account, however, differs somewhat from the published ones. For example, he states that George, Baron Pigot, Governor of Madras, who brought the stone to England, left it to his four children; the *Dictionary of National Biography* states that it was left to his two brothers and a sister. In any case, Parliament in 1800 authorized a lottery for the sale of the jewel; tickets were limited to thirty thousand at one guinea each.³ The prize was won by a club, whose members in turn sold it to Rundell and Bridge, in conjunction with another jeweler named Parker, for about ten thousand pounds. What more natural than that they should try to interest Napoleon, who had just been crowned Emperor, in the diamond! A workman named Liebart was selected to smuggle the jewel into France by way of Holland. Once safely in Paris, he entrusted it to Laffitte & Co., who offered it to the Emperor. At first things went well; then Napoleon became suspicious as to how the jewel got out of England, and Liebart had to flee to escape arrest.

The diamond was not finally returned to Rundell, Bridge and Rundell until 1816 after three lawsuits, one in England and two in France. The English suit determined the sum which Rundell had to pay for Parker's share. Napoleon's surprise return from Elba necessitated the two French suits; for E. W. Rundell, who was just on the point of obtaining the prize, fled from Paris, and negotiations had to be started all over again. Once more in possession of the diamond, the firm sent models to all the crowned heads of Europe; finally the Pasha of Egypt showed an interest. It was sold to him in 1822 for thirty thousand pounds. Here Fox's story again diverges; he states that the Pasha presented it to the Grand Signior, "to induce that sovereign to acknowledge his right to the Government of Egypt." Most other accounts, much more romantic, say that the Pasha, when mortally wounded by assassins that very year, ordered his attendants to grind it to powder.

The celebrations of peace in 1814 and 1815 resulted in a great deal of business for Rundell, Bridge and Rundell. The heads of state of Britain's allies were entertained royally, and for the two largest dinners, at Oxford University and at the Guildhall, London, the firm lent much of the plate. Fox was present on both occasions, to see that everything went smoothly, so his description is particularly vivid. The Prince of Wales was not at all popular, because of his

³ The *D. N. B.* states that two-guinea shares amounting to £23,998 were sold.

treatment of Princess Caroline, and during the Oxford dinner, which was held in the Radcliffe Library, the students, who had been admitted to the gallery, jeered and hissed whenever he spoke. The great Jesus College punch bowl, with a capacity of forty-four bottles of wine, was the center of attraction. And when the dignitaries had gone, their escort, the Oxfordshire yeomanry cavalry, came in to finish up the leavings. Perhaps the only sober person in the company at the close of the night was Fox, who had to see that the plate was all safely returned to London.

The Guildhall dinner was even more lavish; for the City of London paid twelve hundred pounds for the loan of plate, while Oxford's bill was only six hundred. Though Fox asserts that the scene defied description, his own account is effective, and is a good example of his style:

The whole Building was so well illumined that it appeared a complete blaze of continuous light, and heightened the Magic effect of the splendid dresses of the Male and Female Guests who had on this occasion decked themselves with such a profusion of Diamonds and other superb Jewels as to be quite beyond the power of description. The ladies were almost dazzling to behold whilst the Flashing of diamond Stars Garters Epauettes on the Gentlemen quite overpowered the senses of every one who beheld them.

From his position in the wings Fox supplied the Earl of Yarmouth, the Prince Regent's Lord in Waiting for the evening, with a hurried snack of cold turtle soup and East India Madeira. And from the same vantage point he watched the toasts and the singing of Rule Britannia. He was particularly pleased with the sight of the Duke of Kent, flanked by princes of Prussia, bellowing in their ears the line, "For Britons never shall be slaves." The *Annual Register* for 1814 contains a lengthy account of the dinner; it states that the plate was left on the tables three days for the public to see.

Sooner or later most jewelry houses experience a theft, and Rundell, Bridge and Rundell was no exception. The year was 1817, and the method the old one of substitution of boxes. Edmond W. Rundell was the unwitting victim at the hands of a pair who said they represented the King of Bavaria. Jewels to the value of £22,000 were taken; on discovery of the loss, Rundell, Sr., said only: "Now let us go to work again and get some more money." But the thieves were chased over much of the Continent; accomplices were arrested in London; and in the end, the final loss was about £8,000. Aware of the drama of his story, Fox took some twenty-five columns in which to tell it.

It was at about this time that Richard Rush, United States Ambassador to Great Britain, visited the shop of Rundell, Bridge and Rundell. In his *Memoranda of a Residence at the Court of London*, under date of 7 January 1818, he writes:⁴

I went into two shops; one, a silver smith's, that of Rundel and Bridge, on Ludgate-hill. Outside it is plain; you might pass by without noticing it; but on entering, the articles of silver were piled in heaps, even on the floor. Going further into the building, the masses increased. In a room up stairs, there was part of a dinner service, in course of manufacture. The cost of an entire service, varied from thirty to fifty thousand pounds sterling, according to the number of pieces, and workmanship. Sometimes it was much higher. A candelabra for the middle of a table had just been finished for a customer, at fifteen hundred pounds. A dress sword for another customer was shown; the cost was four thousand guineas. Other specimens of luxuries might be mentioned, including ambassadors' snuff boxes, set with a profusion of diamonds. The proprietors were extremely civil; for I gave trouble only through curiosity. If you purchase but a trifle, for a few shillings, they return thanks; if you do not incline to take it away yourself, they readily send it home, no matter to how remote a part of the town.

On a later visit Rush was shown a circlet, worth £8,500, to be worn by George IV only during the procession to Westminster, where he was to be crowned. Fox reports that Rush exclaimed, "Ah it would not quite pay our Presidents Salary for three years."

The circlet was in fact but one of many objects which the firm fashioned for the coronation of George IV. It was sixty years since George III's accession, and the crown jewels had fallen into a sad state. In spite of the unpopularity of George IV and the necessity for retrenchment, Rundell's bill came to over thirty thousand pounds.⁵ The King eagerly seconded Bridge's suggestion that a new crown be

⁴ 2d ed., revised and enlarged (Philadelphia, 1833), pp. 79-80.

⁵ E. Alfred Jones, *The Old Royal Plate in the Tower of London* (Oxford, 1908), itemizes Rundell's bill:

Crown of state, 4,094£

2 ingots of gold, 95£

jewels, loan in crown, value 65,250£, at 10 percent, 10,875£ 1 Aug/20-1 Apr/22
further loan, 1 Apr/22-29 Apr/23 7,025£10s

jewels in circlet, 352 days, value 8,000£ 771£10s

repairs to crown 224£

pattern etc. 735£

loan, value 65,250 at 10 percent 6,525£

Circlet 290£

loan of brilliants for above 8,000 at 800£

king's globe 149£15s

made, but his ministers refused to ask Parliament to pay for it. So in the end it was only rented, at the rate of ten per cent of its total value, £65,250. In case anything should go wrong with the regalia, the King wanted Bridge to be close at hand and suggested a court office requiring fancy dress. This did not suit Bridge at all, who finally obtained permission to appear "in a plain Court dress without Sword or Bag Wig." The ceremony is thus described by Fox:

It would be in vain to attempt the Magnificence of the Scene presented on the return of the Procession from the Abbey to Westminster Hall. When the King attended by the Nobles, the Great Men, and the Mighty Captains of the Empire passed along the Platform it was a sight such as Britain had never seen before and most probably will never more behold. The Magnificent Crown of Brilliants that adorned the head of His Majesty reflected a Blaze of Light and colors perfectly dazzling to behold, as the Sun beams fell directly upon it in its full Meridian power.

Fox places the peak of prosperity of the firm in the year 1816. The decline of the 1820's he attributes to several causes: the fall in the price of gold and silver following the end of the war; the accompanying agricultural depression; the decline in landed rents. As the firm had benefited from its practical monopoly of the royal business, so it suffered by the death of several members of the royal family and the unpopularity of George IV. A serious blow was the retirement of the elder Rundell in 1823, for until that time the partners had been content to re-invest profits in the firm. In accordance with the partnership agreement, his shares were paid for over six years, at five per cent interest. The remaining members of the firm formed a new partnership to last seven years, at the end of which time E. W. Rundell also withdrew. But before that event occurred the death of Rundell, Sr., on 17 February 1827, in his eighty-first year. According to Fox, he left an estate of over a million pounds, the bulk of it to his grand-nephew, Joseph Neeld. The latter was not very popular with the rest of the family, and Fox hints at undue influence. Rundell's amassing of such a fortune from almost nothing, through hard work and frugality, was a never-ending source of wonder to Fox.

crystals Queen Mary's sceptre 3£18s

gold sceptre (Kings) 127£10s

To old crown 15£10s

gold buckles—spurs 13£10s

2 clasps

The *Gentleman's Magazine* for 1823 (vol. ii, p. 77) lists some of the coronation expenses and indicates that Rundell, Bridge and Rundell's bill for snuffboxes to be given to foreign ministers was £8,205.15.



TRADE CARD OF RUNDELL, BRIDGE & RUNDELL
 (slightly enlarged)
 From Kress Room, Baker Library, Harvard University.

The most interesting activity of the firm following Rundell's retirement was its investment in mining stock in the Americas. This was the period of the Bubble Mania when, as Fox says, "the most absurd and extravagant schemes were set in motion." In 1824 Rundell, Bridge and Rundell were induced by Captain Charles S. Cochrane to issue a prospectus for the formation of a joint-stock company to be called the Colombian Pearl Fishery Association. The stock issue consisted of twenty thousand shares of twenty pounds each upon which a deposit of two pounds per share was to be paid to the bankers. Eight thousand of these were issued at a premium of ten pounds, half of which was paid to the Colombian Government, half invested in government stocks. There was no difficulty in selling shares, and the 120,000 pounds were raised in short order. Two ships were fitted out (the contract stipulated they were to go to the Colombian Government at the end of ten years), but they did not find enough pearls to pay a tenth of the cost. The attempt was therefore abandoned, and 4/12/10 was paid on the yellow (or premium) shares. Another company, the South American Mining Association, was then formed; its twenty-pound shares were paid up, but there was no dividend. Mines were sought without success in Colombia and Brazil. Rundell, Bridge and Rundell then applied to the Duke of York for permission to lease his properties in mines in Nova Scotia and Prince Edward Island. This was granted, and the rights were assigned to the General Mining Association (successor to the South American), but with no more success.

Fox implies that the attention directed to these speculations might better have been turned toward the business. He quotes with approval E. W. Rundell's remark that "the very best Mine he ever knew of was the Mine on Ludgate Hill which had been hitherto very productive and would still continue to yield more profit than any South American Mine would ever yield if the parties interested in it, would but work it in the proper way." Rundell, in fact, was "so completely surprised and disgusted" that he withdrew from the partnership in 1830. A new firm, composed of John Bridge, the elder, who held 12/20ths, his nephew, John Gawler Bridge (3/20ths), and Thomas Bigge (5/20ths) was formed. Bigge, a nephew of Rundell, Sr., "was a gentleman by birth as well as education and consequently was by no means fitted for a Retail Shop of business." Young Bridge, according to Fox, never liked the business and was too impetuous. The firm did not benefit by the coronation of William IV in 1830 as it

had done by that of George IV. Parliament was in an even more economical mood and threw open the jewelry contract to competition. Other houses, anxious to receive some of the glory of the royal orders, underbid Rundell, Bridge and Rundell. With the death of Bridge, Sr., in 1834⁶, there was no one left in the firm with his ease of access to the fashionable world. A scheme for the sons of Bigge and J. G. Bridge to start a new firm fell through.

The winding up of affairs dragged on. In the spring of 1842 notice was given of sales at reduced prices. In July there was an auction at Christie and Manson's, King Street, St. James. Two copies in bronze of the shield of Achilles, designed and modeled by John Flaxman, were given to Oxford and Cambridge universities. There were also two copies in bronze, after models by William Theed, of a vase in the possession of the Earl of Warwick. One was sold to the Duke of Northumberland as a gift to Cambridge University, after he had beaten the price down to £900. In a similar show of unseemly (to Fox) bargaining, the Lord Mayor and aldermen offered only £800 for a plateau worth much more. "So much," he says, "for Tory pride and Tory liberality! Alas! Alas! Proud Percy!" But also, "Alas! Alas! poor mean Lord Mayor Humphrey!" John G. Bridge himself made several gifts of plate to the Goldsmith's Company at this time; he was elected to the Court of Assistants in 1831 and Prime Warden in 1839.⁷

Fox and two of his fellow workmen were offered a chance to purchase the property. The price seemed high to them, and, since trade was going to another section of the city, they refused the offer. One quarter's salary was allowed to the employees, and "for the one who had been the longest time in the house⁸ a pittance was doled out to him for the purpose of purchasing an annuity for his life." Fox was human enough to allow this treatment to affect his attitude towards the firm. He had been superintendent of the establishment on Ludgate Hill for some time and had turned down offers from other firms. But his admiration for the two original partners remained unshaken; he implies that, had they been alive, he would have received his just reward.

Here the story ends. Fox realized that his account was incomplete, and he hoped to correct and finish it. In several appendices he did add

⁶ He was in his eightieth year and left personal property worth £400,000.

⁷ Carrington and Hughes, *op cit*.

⁸ Fox himself.

to his tracing of family relationships. And, somewhat aware of his responsibilities as a business historian, he included a copy of a shop card, a shop bill, and a printed circular. But he died before he was able to polish and correct the manuscript as he had hoped to do. There was no one to do it for him, and no publisher to print it. The fashionable world remained in ignorance of the work intended for it; and now the somewhat stilted language, the stories of royalty and nobility, have an archaic flavor. The student of George IV or of the Goldsmiths (two such have already written to Baker Library) may find something of use in the manuscript, but the student of accounting and the economic or business historian will find little. Considering Fox's purpose and his time, this result is not surprising. He has written a discursive, chatty account, full of the names and stories of fashionable people; he has caught the spirit of the time and aptly portrayed the splendid achievement of Rundell, Bridge and Rundell.

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Book to be Presented to Members

Late in the summer, members of the Society will receive *The History of an Advertising Agency: N. W. Ayer & Son at Work, 1869-1949*, by Professor Ralph M. Hower of the Harvard Graduate School of Business Administration. This volume is a revised edition of a book with the same title which first appeared in 1939. It represents a detailed and documented study of one of the oldest and largest advertising agencies in the world. Thus the book focuses attention upon a relatively new type of business, one which has exerted a tremendous influence in our society. Every phase of the Ayer business is covered, so far as source materials permit: relations with clients, media owners, competitors, and the public; growth of the organization, personnel relations, and working conditions, the evolution of management, and formulation of business policy; and accounting and financial history.

This revised edition contains new material, especially for the period since 1936. It will be of special interest because the firm at that time underwent an internal struggle for control which for a while threatened the future of the business. The story of the measures by which the present management regained strength and prosperity has considerable general significance. A number of new illustrations have been included in the present volume.

Announcement of the Business Historical Society Fellowship Award

The Business Historical Society has announced the award of its Fellowship in Business History for 1949-50 to Dr. Charles J. Kennedy of the University of Nebraska. The award carries a stipend of \$2,500, enabling the recipient to spend twelve months of study and research at the Harvard Graduate School of Business Administration.

This Fellowship is designed to help prepare mature students for teaching American Business History. It is being granted this year for the second time and is an indication of the increasing recognition that business has played in shaping American culture.

Dr. Kennedy received his degree of Doctor of Philosophy from the University of Wisconsin and is teaching a course in Business History at the University of Nebraska. He has published a number of articles in his field.

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